

the collated information available from the above preliminary assessment and adopting a precautionary approach, a site-specific survey scope for the ornithological survey was developed.

7.2.4.2 Survey Methodologies

Field surveys were undertaken during the survey period April 2020 – May 2022, consisting of 2 breeding seasons (April – September) and 2 non-breeding seasons (October – March).

In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document '*Recommended bird survey methods to inform impact assessment of onshore wind farms*' (SNH, 2017). The various ornithological surveys undertaken at the Proposed Wind Farm site and hinterland are described in detail below.

Note: The Proposed Wind Farm site has contracted from the extent of the site covered during surveys, which encompassed an additional area approximately 3km south of the Proposed Wind Farm site. Data from vantage point surveys, breeding walkover surveys, breeding woodcock surveys and winter walkover surveys carried out within this additional area are presented as additional supplementary data. The survey radii outlined below for breeding raptor surveys, waterbird distribution surveys and [REDACTED] surveys are a minimum distance; the surveys generally covered an area greater than the required radius. The survey locations / areas are shown in Figures 7-1 to 7-12.

7.2.4.2.1 Vantage Point Surveys

Vantage point (VP) surveys were undertaken in accordance with NatureScot (2017) to monitor flight activity within the Proposed Wind Farm site and within a 500m radius of the Proposed turbine positions. Surveys were conducted from one fixed point vantage point (VP1) with comprehensive coverage of the Proposed Wind Farm site (Figure 7-1). The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the Proposed Wind Farm turbine layout was entirely covered.

Surveys were also undertaken from an additional supplementary vantage point location (VP2) south of the Proposed Wind Farm site (Figure 7-2). As outlined above, the Proposed Wind Farm site has contracted from the extent of the site covered during surveys, which encompassed an additional area approximately 3km south of the Proposed Wind Farm site. As such, the viewshed of the vantage point VP2 no longer contains turbines. This vantage point is therefore not included in the collision risk analysis. However, data from this VP location is presented in this chapter as additional supplementary data.

Viewshed Analysis

Viewsheds were calculated using visibility analysis over raster DEM (Version 1.8) in QGIS (Version 3.28) using a notional layer suspended at 22m, 30m and 30.5m, which is representative of the minimum heights considered for the Potential Collision Risk Area based on a turbine model congruent with the proposed turbine range dimensions. While the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance (2017) emphasises the importance of visibility of the 'collision risk volume' when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points.

The vantage point locations were tested for visibility coverage by creating a viewshed point 1.75m in height (to represent the height of the observer) on a map using 10m contours terrain data. The relative height of any surrounding vegetation and its effects on visibility was recorded during a site visit and is also accounted for in the analysis. Using the ZTV software, a viewshed of 360° was produced

As outlined further above, the Proposed Wind Farm site has contracted from the extent of the site covered during surveys, which encompassed an additional area approximately 3km south of the Proposed Wind Farm site. Breeding woodcock surveys were also undertaken within this additional area (Transect 3 - see Figure 7-10). Data from breeding woodcock surveys within this area are presented in this chapter as additional supplementary data.

Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-9 shows the transect routes.

7.2.4.2.5 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Proposed Wind Farm site and within a 500m radius of the Proposed Wind Farm site, including areas away from vantage point locations. The methodology was adapted from the breeding walkover methodology outlined in Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Transect routes were walked across different habitat complexes within the survey area where access allowed. All target species were recorded and mapped. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

As outlined further above, the Proposed Wind Farm site has contracted from the extent of the site covered during surveys, which encompassed an additional area approximately 3km south of the Proposed Wind Farm site. Winter walkover surveys were also undertaken within this additional area (Transect 2 - see Figure 7-7). Data from winter walkovers within this area are presented in this chapter as additional supplementary data.

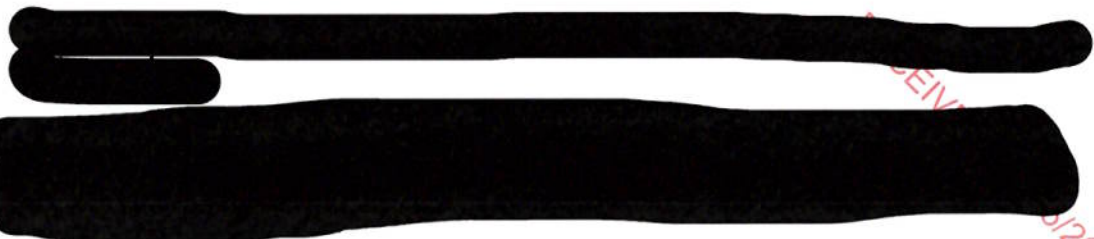
Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in winter 2020/2021, four visits in winter 2021/2022). Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-5 shows the survey area.

7.2.4.2.6 Waterbird Distribution and Abundance Surveys

Waterbirds include: swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Significant wetlands and waterbodies within a minimum 5km of the Proposed Wind Farm site were surveyed for waterbirds during the 2020/2021 and 2021/2022 winter and passage seasons (August to May inclusive) to provide information on their distribution and abundance in relation to the Proposed Wind Farm site. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of NatureScot (2017) and follows the recommendations of NatureScot (2016) to account for the core foraging range of whooper swan (<5km) which were determined to potentially occur in the area following the initial site assessment.

Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021). Surveys were undertaken during daylight hours from suitable vantage points at wetlands and waterbodies. All target waterbird species were recorded and mapped. Survey effort, including details of survey duration and weather conditions, is presented in Appendix 7-2. Figure 7-11 shows the surveyed area.

7.2.4.2.7



7.2.4.2.8 **Multidisciplinary Walkover Survey**

The Proposed Grid Connection Route options were surveyed in January 2023 through a multidisciplinary walkover survey. The site was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on this survey are available in Chapter 6: Biodiversity of this EIAR.

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Table 7-5 (Determination of significance) outline the assessment criteria for each stage.

Table 7-3 Evaluation of sensitivity for birds (from Percival, 2003)

Sensitivity	Determining Factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of a SPA but which are not cited as a species for which the site is designated. Ecologically sensitive species including the following: divers, common scoter, golden eagle, red necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% of the Irish population)
Medium	Species listed on Annex 1 of the EU Birds Directive. Species present in regionally important numbers (>1% county population). Other species on BirdWatch Ireland's Red List of Birds of Conservation Concern
Low	Any other species of conservation interest, including species on BirdWatch Ireland's Amber List of Birds of Conservation Concern, not covered above.

Table 7-4 Determination of magnitude of effects (from Percival, 2003)

Sensitivity	Description
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions, such that the post development character/composition/attributes will be fundamentally changed and may be lost from the site altogether. Guide: < 20% of population / habitat remains
High	Major loss or major alteration to key elements/features of the baseline (pre-development) conditions such that post development character/composition/attributes will be fundamentally changed. Guide: 20-80% of population/ habitat lost
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed. Guide: 5-20% of population/ habitat lost
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Guide: 1-5% of population/ habitat lost
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation.

7.3.2

Breeding and Wintering Bird Atlas Records

'Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland' (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. Previous bird atlases have been the primary source of information on the distribution and abundance of British and Irish birds prior to Bird Atlas 2007-11. The three previously published atlases were:

- The atlas of breeding birds in Britain and Ireland (Sharrock, 1976)
- The atlas of wintering birds in Britain and Ireland (Lack, 1986)
- The new atlas of breeding birds in Britain and Ireland: 1988-1991. (Gibbons *et al.*, 1993)

The Proposed Wind Farm site lies within hectad S66. The Proposed Grid Connection Route extends into hectads S55 and S56. Junction accommodation works are proposed within hectad S57. Table 7-7 and Table 7-8 below present a list of species of conservation interest recorded from the hectad encompassing the Proposed Wind Farm site, with regard to breeding and wintering respectively.

Table 7-7 Breeding Bird Atlas Data (Hectad S66).

Species Name	Breeding Atlas 1968-1972	Breeding Atlas 1988-1991	Breeding Atlas 2007-2011	Conservation Status
Barn Owl	Probable	-	-	RL
Corncrake	confirmed	-	-	BD
Curlew	confirmed	seen	-	RL
Grey Partridge	confirmed	-	-	RL
Grey Wagtail	confirmed	breeding	-	RL
[REDACTED]	probable	-	-	BD
Kestrel	confirmed	-	confirmed	RL
Kingfisher	confirmed	-	confirmed	BD
Lapwing	confirmed	-	-	RL
Meadow Pipit	confirmed	breeding	probable	RL
Redshank	-	breeding	-	RL
Snipe	confirmed	breeding	-	RL
Stock Dove	confirmed	breeding	probable	RL
Swift	confirmed	breeding	confirmed	RL
Yellowhammer	confirmed	breeding	confirmed	RL

Seen = recorded; Poss = possible breeding; Prob = probable breeding; Conf = confirmed breeding; - = not-recorded; Bred = Breeding Record. Conservation Status: BD = Annex I of the Birds Directive, RL = BoCCI Red Listed.

Table 7-8 Wintering Bird Atlas Data (Hectad S66).

Species Name	Wintering Atlas 1981-1984	Wintering Atlas 2007-2011	Conservation Status
Barn Owl	present	-	RL
Bewick's Swan	present	-	BD
Curlew	present	-	RL
Golden Plover	present	present	BD

Species Name	Wintering Atlas 1981-1984	Wintering Atlas 2007-2011	Conservation Status
Grey Wagtail	present	present	RL
	-	present	BD
Kestrel	present	present	RL
Kingfisher	present	-	BD
Lapwing	present	present	RL
Little Egret	-	present	BD
Meadow Pipit	present	present	RL
Pochard	present	-	RL
Redwing	present	present	RL
Snipe	present	present	RL
Whooper Swan	present	present	BD
Woodcock	present	present	RL
Yellowhammer	present	present	RL

Pres = present in hectad; - = not recorded. Conservation Status: BD = Annex I of the Birds Directive, RL = BoCCI Red Listed

7.3.3 Bird Sensitivity Mapping Tool

A Bird Sensitivity Mapping Tool for wind energy development was developed by BirdWatch Ireland to provide a measured spatial indication of where protected birds are likely to be sensitive to wind energy developments. The tool can be accessed via the National Biodiversity Data Centre Website (www.biodiversityireland.ie) and is accompanied by a guidance document (McGuinness *et al.*, 2015). The criteria for estimating a zone of sensitivity (i.e. 'low', 'medium', 'high' and 'highest') is based on a review of the behavioural, ecological and distributional data available for each species.

The Proposed Wind Farm site is not located within an area identified as sensitive to birds (i.e. there is no data available). The Proposed Wind Farm site is over 40km from the nearest area of high sensitivity, i.e., the Slieve Bloom Mountains.

7.3.4 Irish Wetland Bird Survey Records

The Irish Wetland Bird Survey (I-WeBS), coordinated by BirdWatch Ireland, monitors wintering waterbird populations at their wetland sites across Ireland. I-WeBS site locations are available at <https://birdwatchireland.ie/our-work/>.

The Proposed Wind Farm site is not covered by an I-WeBS site and the nearest site is located approximately 5km east of the Proposed Wind Farm site – i.e., the River Barrow (Goresbridge-Maganey Bridge). Owing to the geographical location of the Proposed Wind Farm site, at the meeting point of three counties (Co. Carlow, Co. Kilkenny and Co. Laois), data from I-WeBS sites within 25km of the site has therefore been used to estimate populations at the 'county' level for wintering waterbirds identified as KORs³. Datasets for the following sites were sourced from www.birdwatchireland.ie and reviewed:

³ The limitations of using this data to estimate a county population is acknowledged, e.g. as all the counts in a given year were not undertaken on the same day typically there is the potential for under or over estimates, however this is the best available information.

Species	Overall breeding status	Overall wintering status
Golden Plover (Annex I)	Non-breeding. There was no evidence of breeding at the site during surveys.	No regularly used roosts identified
[REDACTED] (Annex I)	Non-breeding. There was no evidence of breeding at the site during surveys.	No regularly used roosts identified
Peregrine Falcon (Annex I)	Probable Breeding. Probable breeding territory identified during 2021 breeding season approximately 3.6km from the Proposed Wind Farm site.	No regularly used roosts identified
Kestrel (Red Listed)	Confirmed Breeding. Up to three breeding territories identified within 6km of Proposed Wind Farm site.	No regularly used roosts identified
Lapwing (Red Listed)	Non-breeding. There was no evidence of breeding at the site during surveys.	No regularly used roosts identified
Snipe (Red Listed)	Non-breeding. There was no evidence of breeding at the site during surveys.	No regularly used roosts identified
Woodcock (Red Listed)	Probable Breeding. Roding males recorded in suitable habitat within Proposed Wind Farm site.	No regularly used roosts identified
Buzzard (Raptor)	Confirmed Breeding. One probable breeding territory identified within Proposed Wind Farm site and additional three probable and one confirmed breeding territories identified within 6.8km of the Proposed Wind Farm site.	No regularly used roosts identified
Long-eared Owl (Raptor)	Confirmed Breeding. Breeding territory identified 3.8km from Proposed Wind Farm site.	No regularly used roosts identified
Sparrowhawk (Raptor)	Confirmed Breeding. One probable breeding territory identified within Proposed Wind Farm site and additional two probable and three confirmed breeding territories identified within 4.4km of the Proposed Wind Farm site.	No regularly used roosts identified

The target species listed in Table 7-10 below were only recorded during waterbird distribution surveys and additional supplementary surveys greater than 4km from the Proposed Wind Farm site. The vast

majority of these records were from habitats associated with the River Barrow, which was encompassed by the waterbird distribution survey area. These species were not observed within a minimum 4km of the Proposed Wind Farm site and, therefore, there is no potential for impact from the Proposed Project. A summary of observations is provided in Table 7-10 below.

Table 7-10 Target species recorded outside the Potential ZOI of the Proposed Project.

Species	Observations
Kingfisher (Annex I)	Closest record = 5.3km distant from Proposed Wind Farm site. There were 11 observations of kingfisher during waterbird distribution surveys comprising between 1-2 birds travelling, calling and hunting. All observations were along the River Barrow.
Little Egret (Annex I)	Closest record = 5.3km distant from Proposed Wind Farm site. There were 18 observations of little egret during waterbird distribution surveys comprising between 1-6 birds travelling and feeding. All observations were associated with the River Barrow.
Whooper Swan (Annex I)	Closest record = 5.8km distant from Proposed Wind Farm site. There were 20 observations of whooper swan during waterbird distribution surveys comprising between 3-41 birds foraging on agricultural grassland adjacent to the River Barrow. The majority of observations (17 of 20) related to an area approximately 12.7km from the Proposed Wind Farm site.
Curlew (Red Listed)	Closest record = 4.7km distant from Proposed Wind Farm site. There were six observations of curlew during waterbird distribution surveys comprising between 1-33 birds foraging on agricultural grassland adjacent to the River Barrow over 5.5km from the Proposed Wind Farm site. There were three observations of curlew during supplementary breeding walkover surveys. Observations comprised flocks of between 7-11 birds during one day in July 2021, calling and landing on agricultural grassland approximately 4.7km south of the Proposed Wind Farm site.

A list of all bird species recorded during surveys is provided in Appendix 7-1. Appendix 7-3 presents results summary tables including:

- > Summary of vantage point survey records
- > Summary of breeding walkover survey records
- > Summary of breeding raptor survey records
- > Summary of breeding woodcock survey records
- > Summary of winter walkover survey records
- > Summary of waterbird distribution survey records
- > Summary of non-target species recorded

Sensitive data relating to breeding sites are provided in Confidential Appendix 7-7.

7.3.6.1 Golden Plover

Golden plover were observed in the winter and passage⁴ seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Golden plover were frequently recorded during vantage point surveys in winter 2020/21 and infrequently recorded in winter 2021/22. The species was overall observed on average once every 1.2 hours of vantage point surveys during winter season and once every 5.5 hours during breeding season, with an average flock size of 92 birds and a peak count of 500 individuals.

Observations were within the months of October - November and March - April, i.e. largely during the passage season with no observations during the core winter months of December - February. The majority of observations comprised birds travelling and circling, with flock sizes ranging from an individual up to 500 birds. Of the 70 observations 33 were within/partially within the Proposed Wind Farm site and 20 were within/partially within 500m of the Proposed Wind Farm site. Of the 70 observations, 61 were during the 2020/2021 winter season (41 of which were from two days in October and November 2020), with only nine observations during the whole 2021/2022 winter season.

There were 17 observations of Golden plover landing on ground, ranging from an individual up to 350 birds. None of these observations were within the Proposed Wind Farm site. There were seven observations of birds seen landing within 500m of the Proposed Wind Farm site (flocks of 2, 3, 6, 6, 7, 12 & 350 birds). The remaining 10 observations comprised birds landing over 500m from the Proposed Wind Farm site (flocks of 12 to 115 birds), with the majority relating to an area of agricultural grassland approximately 1.6km south-west of the Proposed Wind Farm site. There was a further one observations of birds seen low and possibly landing, but not confirmed, at boundary of Proposed Wind Farm site (flock of 84 birds in April 2021).

Winter Walkover Surveys

Golden plover was recorded on eight occasions during winter walkover surveys, in the months of March and October. All observations comprised birds in flight travelling with flocks ranging from an individual up to 700 birds. Of these observations, four were within/partially within the Proposed Wind Farm site and three were within/partially within 500m of the Proposed Wind Farm site.

Waterbird Distribution and Abundance Surveys

Golden plover was recorded on 29 occasions during waterbird distribution surveys, across the months of October – April. Observations comprised birds travelling, feeding and roosting and ranged in size from an individual up to 801 birds. There were no observations within the Proposed Wind Farm site, and one observation within 500m of the Proposed Wind Farm site, comprising a bird heard calling.

Incidental Records

[REDACTED] All observations comprised birds travelling and/or circling with flock sizes ranging from an individual up to 801 birds. Of the 13 observations, five were within/partially within the Proposed Wind Farm site with no further observations within/partially within 500m of the Proposed Wind Farm site.

⁴ Passage season refers to the period when birds are on migration or movement between breeding and wintering areas, typically in the months of August, September, March and April.

Supplementary Data

Golden plover was recorded on 10 occasions during supplementary vantage point surveys. The majority of observations comprised birds travelling and circling, with flock sizes ranging from an individual up to 200 birds. There was one observation of a flock of 172 birds coming in to land on agricultural grassland. All observations were greater than 500m from the Proposed Wind Farm site. All observations were during the 2020/2021 winter season.

7.3.6.2

Vantage Point Surveys

Supplementary Data

7.3.6.3 Peregrine

Peregrine was recorded during the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data relating to breeding locations are presented in Confidential Appendix 7-7.

Vantage Point Surveys

Peregrine was recorded on one occasion during vantage point surveys, comprising a single bird circling, calling and mobbing a buzzard in September partially within 500m of the Proposed Wind Farm site.

Breeding Raptor Surveys

Peregrine was recorded on 13 occasions during breeding raptor surveys. Of these observations, one was within the Proposed Wind Farm site, comprising a bird soaring / gliding over site in June 2020. There were no further observations within 500m of the Proposed Wind Farm site.

There were several observations of breeding behaviour recorded during the 2021 breeding season, comprising a pair active over a quarry in April, and observations of single birds dropping down into the quarry and perching on the quarry face in May and June, suggesting a probable breeding attempt at

In July 2021 provisioning was observed at a quarry 5.5km from the Proposed Wind Farm site confirming breeding at this location (Ref: K-c).

Winter Walkover Surveys

Kestrel were frequently recorded during breeding raptor surveys, the species was observed on average once every 1.2 hours of survey. All observations comprised individual birds hunting, travelling and perching. Of the 22 observations, 15 were within/partially within the Proposed Wind Farm site and seven were within/partially within 500m of the Proposed Wind Farm site.

Incidental Records

There were 60 incidental records of kestrel during waterbird distribution survey [REDACTED] surveys, and breeding woodcock surveys. The majority of observations were of single birds hunting and travelling. Of the 60 observations, 11 were within/partially within the Proposed Wind Farm site and seven were within/partially within 500m of the Proposed Wind Farm site.

Supplementary Data

Kestrel was frequently recorded during supplementary vantage point surveys, the species was observed on average once every 35 minutes of supplementary vantage point surveys. The majority of observations were of single birds hunting, travelling and perching. A breeding territory was confirmed during these surveys approximately 3.5km from the Proposed Wind Farm site (Ref: K-a) during both the 2020 and 2021 breeding seasons. The majority of observations from the supplementary vantage point survey related to activity associated with this breeding territory situated in close proximity to the vantage point location.

Kestrel was recorded on three occasions during supplementary breeding walkover surveys. All observations were of single birds travelling and hunting.

Kestrel was recorded on seven occasions during supplementary winter walkover surveys. All observations were of single birds travelling, hunting and perching.

Breeding Summary

- 2020 – One confirmed breeding territory (Ref: K-a) 3.5km from Proposed Wind Farm site.
- 2021 – Three confirmed breeding territories (Refs: K-a (i.e. same location as 2020), K-b & K-c) 3.5km, 3.7km and 5.5km from the Proposed Wind Farm site respectively.

7.3.6.5 Lapwing

Lapwing was recorded during the breeding, passage and winter seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Lapwing was infrequently recorded during vantage point surveys, the species was observed on average once every 48 hours of vantage point surveys, with an average flock size of 5 birds and a peak count of 12 individuals. Observations were from May and June. All three observations were partially within the Proposed Wind Farm site and comprised birds travelling. One of the observations comprised of a flock of 2 birds potentially landing in agricultural field approximately 300m from the Proposed Wind Farm site in May 2020.

Waterbird Distribution Surveys

Lapwing was recorded on 16 occasions during waterbird distribution surveys. Observations comprised birds travelling, feeding and roosting and ranged in size from an individual up to 878 birds. There were no observations within 500m of the Proposed Wind Farm site. All observations related to birds at habitats associated with the River Barrow, between 5km and 12km from the Proposed Wind Farm site.

Incidental Records

There was one incidental record of lapwing during [REDACTED] comprising a flock of eight birds travelling 1.6km from the Proposed Wind Farm site in January 2021.

7.3.6.6 Snipe

Snipe was recorded during the winter, passage and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Snipe was infrequently recorded during vantage point surveys, the species was observed on average once every 5 hours of vantage point surveys, with an average flock size of one bird and a peak count of three individuals. Observations comprised birds travelling, calling and flushing. All observations were during the winter and passage seasons, with no observations during the core breeding season months of May – July. Of the 30 observations, seven were within/partially within the Proposed Wind Farm site and 23 were within/partially within 500m of the Proposed Wind Farm site. No drumming or indications of breeding were recorded.

Winter Walkover Surveys

Snipe was infrequently recorded during winter walkover surveys, the species was observed on average once every 5.3 hours of survey. All observations comprised birds flushed, ranging from an individual up to five birds. All five observations were within the Proposed Wind Farm site.

Incidental Records

There were 28 incidental records of snipe during [REDACTED]. Observations comprised birds flushed, travelling and calling and ranged from an individual up to eight birds. Of the 28 observations, two were within the Proposed Wind Farm site and one was within 500m of the Proposed Wind Farm site.

Supplementary Data

Snipe was infrequently recorded during supplementary vantage point surveys, the species was observed on average once every 11 hours of supplementary vantage point surveys. Observations comprised birds travelling and calling and were from April, October and December, with one observation in May.

7.3.6.7 Woodcock

Woodcock was recorded during the breeding and winter seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data relating to breeding locations are presented in Confidential Appendix 7-7.

Vantage Point Survey

Woodcock was infrequently recorded during vantage point surveys; the species was observed on average once every 18 hours of vantage point surveys. All observations comprised single birds and were during the months of April, May and December. There were three observations of woodcock in display flight in May 2020 within the Proposed Wind Farm site.

Breeding Woodcock Survey

Woodcock was frequently recorded during the dedicated breeding woodcock surveys; the species was observed on average once every 10 minutes of survey. The majority of observations comprised roding males, indicating probable breeding throughout the Proposed Wind Farm site in suitable habitat, with a minimum of three breeding areas identified within the Proposed Wind Farm site, each containing a minimum of one pair (Refs: WK-a, WK-b & WK-c - see Figure 7.7.3.2 in Confidential Appendix 7-7 for breeding area locations).

Winter Walkover Survey

There were two observations of woodcock during winter walkover surveys, comprising an individual travelling and flushed within the Proposed Wind Farm site.

Incidental Records

There were 11 incidental records of woodcock during [REDACTED] There were five observations of roding males during surveys in March 2021 indicating probable breeding in this area, approximately 1.1km north of the Proposed Wind Farm site (Ref: WK-g).

Supplementary Data

There was one observation of woodcock during supplementary vantage point surveys, comprising a single bird travelling in December 2020.

Woodcock was frequently recorded during the supplementary breeding woodcock surveys, the species was observed on average once every 15 minutes of supplementary survey. The majority of observations comprised roding males, indicating probable breeding areas in suitable habitat, with a minimum of three breeding areas identified approximately 3.5km – 4.5km from the Proposed Wind Farm site, each containing a minimum of one pair (Refs: WK-d, WK-e & WK-f).

There was one observation of woodcock during supplementary winter walkover surveys, comprising a single bird flushed in March 2021.

7.3.6.8 Buzzard

Buzzard was recorded during the breeding and winter seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data relating to breeding locations are presented in Confidential Appendix 7-7.

Vantage Point Surveys

Buzzard was frequently recorded during vantage point surveys, the species was observed on average once every 1 hour of vantage point surveys, with an average count of 1 bird and a peak count of 3 individuals. The majority of observations comprised single birds soaring, travelling and hunting. Of the

149 observations, 80 were within/partially within the Proposed Wind Farm site and 67 were within/partially within 500m of the Proposed Wind Farm site.

There was one observation of breeding behaviour, comprising a bird in display flight in July 2021 indicating a probable breeding territory at a location partially within the Proposed Wind Farm site (Ref: BZ-a - see Figure 7.7.4.4 in Confidential Appendix 7-7 for breeding territory locations).

Breeding Walkover Survey

Buzzard was frequently recorded during breeding walkover surveys, the species was observed on average once every 1 hour of survey, with an average count of 1 bird and a peak count of 4 individuals. Of the 28 observations, 27 were within / partially within the Proposed Wind Farm site and one was within 500m of the Proposed Wind Farm site. There were several observations of breeding behaviour. These all related to the probable breeding territory detailed above (BZ-a) within the Proposed Wind Farm site. Alarm calling was heard from this location in June 2021. Juveniles were then observed at this location in July 2021.

Breeding Raptor Survey

Buzzard was infrequently recorded during breeding raptor surveys, the species was observed on average once every 4 hours of survey, with an average count of 1 bird and a peak count of 4 individuals. The majority of observations comprised single birds soaring, travelling and hunting. There were several observations of breeding behaviour.

During survey in July 2020 two juvenile were recorded begging with an adult also present in the vicinity, approximately 4.4km from the Proposed Wind Farm site. As the juveniles were capable of flight it cannot be confirmed that this is the site of the breeding territory, however adopting a precautionary approach a probable breeding territory has been attributed to this location (Ref: BZ-b).

In May 2021 a pair were observed in display flight over forestry indicating probable breeding at this location approximately 4.5km from the Proposed Wind Farm site (Ref: BZ-c).

A pair was also recorded in display flight and emerging from forestry alarm calling at a location 2.5km from the Proposed Wind Farm site in May 2021 (Ref: BZ-d).

In July 2021 an adult was observed provisioning a nest approximately 6.9km from the Proposed Wind Farm site, confirming breeding at this location (Ref: BZ-e).

Winter Walkover Survey

Buzzard was infrequently recorded during winter walkover surveys; the species was observed on average once every 3 hours of survey. Of the eight observations, six were within/partially within the Proposed Wind Farm site and two were within/partially within 500m of the Proposed Wind Farm site. All observations comprised birds soaring, travelling, calling and hunting, with most observations being of a single bird and one observation of two birds.

Incidental Records

There were 67 incidental records of buzzard during breeding woodcock, waterbird distribution and [REDACTED]. The majority of observations comprised single birds soaring, travelling and hunting, with a maximum of four birds recorded. Of the 67 observations, eight were within/partially within the Proposed Wind Farm site and five were within/partially within 500m of the Proposed Wind Farm site.

Supplementary Data

Buzzard was frequently recorded during supplementary vantage point surveys; the species was observed on average once every 1.5 hours of supplementary vantage point survey. The majority of observations comprised single birds soaring, travelling and hunting. There were some observations of breeding behaviour. In May 2021 a bird was observed in display flight over suitable breeding habitat, indicating probable breeding at this location, approximately 3.8km from the Proposed Wind Farm site (Ref: BZ-f).

Buzzard was recorded on 15 occasions during supplementary breeding walkover surveys. Observations comprised between 1-2 birds soaring, travelling, hunting, perching and calling.

Buzzard was recorded on 3 occasions during supplementary winter walkover surveys. All observations comprised single birds travelling and/or calling.

Breeding Summary

- 2020 – One probable breeding territory (Ref: BZ-b) 4.4km from Proposed Wind Farm site.
- 2021 – Four probable breeding territories (Refs: BZ-a, BZ-c, BZ-d & BZ-f) within the Proposed Wind Farm site and 4.5km, 2.5km and 3.8km from the Proposed Wind Farm site respectively; and one confirmed breeding territory (Ref: BZ-e) 6.9km from the Proposed Wind Farm site.

7.3.6.9 Long-eared Owl

Long-eared owl was recorded during the breeding and winter seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data relating to breeding locations are presented in Confidential Appendix 7-7.

Breeding Raptor Survey

There was one observation of long-eared owl during breeding raptor surveys, comprising an individual flying over a track between conifer plantations in May 2020, approximately 2.3km from the Proposed Wind Farm site.

Incidental Records

[REDACTED]

Farm site in June 2020, confirming breeding at this location (Ref: LE-a - see Figure 7.7.5.2 in Confidential Appendix 7-7 for breeding territory location). The other incidental record comprised an individual hunting approximately 1.2km from the Proposed Wind Farm site in March 2021.

7.3.6.10 Sparrowhawk

Sparrowhawk was recorded during the breeding and winter seasons. Raw survey data and maps are provided in Appendix 7-4. Sensitive data relating to breeding locations are presented in Confidential Appendix 7-7.

Vantage Point Survey

Sparrowhawk was infrequently recorded during vantage point surveys, the species was observed on average once every 4 hour of vantage point surveys, with an average count of 1 bird and a peak count of 2 individuals. The majority of observations comprised single birds travelling and hunting. There were two observations of breeding behaviour, both comprising a female in display flight and dropping down into forestry within Proposed Wind Farm site in March 2021, indicating probable breeding at this location (Ref: SH-a - see Figure 7.7.6.4 in Confidential Appendix 7-7 for breeding territory locations).

Breeding Walkover Survey

Sparrowhawk was infrequently recorded during breeding walkover surveys, the species was observed on average once every 5 hour of survey. All observations comprised individual birds travelling and/or hunting within the Proposed Wind Farm site.

Breeding Raptor Survey

Sparrowhawk was infrequently recorded during breeding raptor surveys, the species was observed on average once every 5 hours of survey. The majority of observations comprised single birds soaring, travelling and hunting. There were several observations of breeding behaviour.

In May 2020 agitated calling was heard from an adult within forestry approximately 3.1km from the Proposed Wind Farm site, indicating probable breeding at this location (Ref: SH-b).

In July 2020 chicks were heard calling from nest site within forestry approximately 1.4km from the Proposed Wind Farm site, confirming breeding at this location (Ref: SH-c).

Also in July 2020, a pair was observed soaring together and descending into forestry approximately 2.2km from the Proposed Wind Farm site, indicating probable breeding at this location (Ref: SH-d).

Winter Walkover Survey

Sparrowhawk was infrequently recorded during winter walkover surveys, the species was observed on average once every 6.5 hours of survey. All observations comprised individuals travelling and/or hunting and all four observations were within the Proposed Wind Farm site.

Incidental Records

There were 22 incidental records of sparrowhawk during waterbird distribution surveys and [REDACTED]. All observations comprised individuals travelling and/or hunting. Of the 22 observations, four were within/partially within the Proposed Wind Farm site and one was within/partially within 500m of the Proposed Wind Farm site.

Supplementary Data

Sparrowhawk was frequently recorded during supplementary vantage point surveys; the species was observed on average once every 4 hours of supplementary vantage point survey. The majority of observations comprised single birds travelling and hunting.

Sparrowhawk was recorded on six occasions during supplementary breeding walkover surveys. The majority of observations comprised single birds travelling and hunting. In July 2020 chicks were observed calling from nest sites at two locations, 3.8km and 4.3km from the Proposed Wind Farm site, confirming breeding at these locations (Refs: SH-e & SH-f).

- Winter 2020/2021 = 1,276
- Winter 2021/2022 = 50
- Mean = 663

Based on the above, the mean wintering population⁸ from 25km radius of the Proposed Wind Farm site is 1,215 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 12 or more birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance.

Flocks of 12 birds or more (County Importance) were regularly recorded within 500m of the Proposed Wind Farm site. The population recorded within 500m of Proposed Wind Farm site was therefore assigned **County Importance** on the basis of a resident/regularly occurring wintering population assessed to be important on a county level.

Breeding

The only observation of golden plover during the breeding season are from early April. These observations are believed to be birds on passage given the breeding range of the species⁹, flock size, time of year and no further observations during the breeding season months of May to August inclusive.

The Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

7.4.1.2

Wintering

⁸ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

⁹ The breeding range is largely restricted to western and northern coastal counties.

Breeding

There was only one observation of [REDACTED] within 500m of the Proposed Wind Farm site during the breeding season, comprising a ringtail hunting in August 2021. The Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

7.4.1.3 Peregrine

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the estimated population of peregrine is 425 pairs. Therefore, as per NRA 2009, a regularly occurring population of four pairs of peregrine is required for classification as Nationally Important. There are no published figures for the County Carlow population of peregrine. Assuming an even distribution of peregrine across the 26 counties of the Republic of Ireland, the population of peregrine in Co. Carlow is roughly estimated to be 32 birds (national population divided by 26 counties). Taking a precautionary approach and using the above as a guide; a regularly occurring population of a single bird is required for classification of County Importance.

Peregrine was only observed on one occasion within 500m of the Proposed Wind Farm site over the two years of surveying, comprising an individual soaring / travelling in June 2020. A probable nest site was identified during 2021 breeding season, located approximately 3.4km from the Proposed Wind Farm site.

The Proposed Wind Farm site is of **No Ecological Importance** to this species, given that there was only one observation of this species within the Proposed Wind Farm site over the two years surveying and that the activity recorded, including the probable nest site, related to habitats distant from the Proposed Wind Farm site.

7.4.1.4 Kestrel

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimates of kestrel in the ROI is 13,500 birds. Using these latest figures, 1% of the National population of kestrel is 135 birds. Therefore, as per NRA 2009, a regularly occurring population of 135 birds is required for classification as Nationally Important.

There are no published figures for the County Carlow population of kestrel. Assuming an even distribution of kestrel across the 26 counties of the ROI¹⁰, the population of kestrel in County Carlow is estimated to be 519 birds (national population divided by 26 counties). Therefore, a regularly occurring population of five birds is required for classification of County Importance.

There were no breeding territories identified within the Proposed Wind Farm site or within 500m of the Proposed Wind Farm site. There was a maximum of three breeding territories per year (2020–2021) identified in the surrounding area, the closest of which was 3.5km from the Proposed Wind Farm site. This indicates a resident population of six adult birds during the breeding season in the wider area. Kestrel were regularly recorded hunting within the Proposed Wind Farm site, and it can therefore be assumed birds from these territories utilise the Proposed Wind Farm site as hunting grounds. This population would be bolstered by fledglings at the end of the breeding season, which will remain present in the area until the start of the next breeding season, when birds become territorial again. Given that kestrel have brood sizes of four to five chicks, and a survival rate of 30% in their first year¹¹, it is likely that there would be a population of approximately six adults and five juvenile birds by the end of each winter season. The population recorded at the Proposed Wind Farm site was therefore

¹⁰ While acknowledging the unfavourable conservation status of this species with an identified population decline, this remains a species with a widespread distribution in Ireland (BoCCI, 2020-2026).

¹¹ <https://app.bto.org/birdfacts/results/bob/3040.html>

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Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
[REDACTED]	Annex I, EU Birds Directive; BoCCI Amber List & Irish Wildlife Act.	[REDACTED]	[REDACTED]	No
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	No
Peregrine	Annex I, EU Birds Directive & Irish Wildlife Act.	<u>All Seasons</u> No population of ecological significance recorded	There was only a single record of peregrine within 500m of the Proposed Wind Farm site during the two years of surveys, comprising a bird travelling. The potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species. Please refer to Section 7.4.1 for further detailed discussion. No pathways for significant effects were identified.	No
Kestrel	BoCCI Red Listed (Breeding Populations) &	<u>All Seasons</u> County Importance	There were no kestrel territories identified within the Proposed Wind Farm site. However, up to three territories were observed within the area of the Proposed Wind Farm site and kestrel were regularly recorded hunting within the Proposed Wind Farm site. The potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	Yes

7.5.2.3

Snipe (Wintering)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Snipe was recorded within the Proposed Wind Farm site on 14 occasions over the two years of surveying. The majority of these observations comprised birds in flight travelling. There were 6 observations of snipe utilising habitats within the Proposed Wind Farm site (comprising birds seen taking off, landing and flushed from ground). Five of these observations were of single birds and one observation was of five birds. These utilised habitats comprised areas of recently felled and newly planted forestry. These habitats are abundant in the wider area and are not unique to the Proposed Wind Farm site. In addition, the land lost to the permanent development footprint is small, comprising a total of 7.3ha (or 2%) of the overall site (370 ha). No significant effects are predicted.	The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabature of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Long-term Not Significant Negative Effect
Disturbance	Snipe was only recorded utilising habitats within the Proposed Wind Farm site on six occasions over the two years of bird surveys. There were nine records of birds utilising habitats within 500m of the Proposed Wind Farm site (between 1-2 birds). These observations were from agricultural grassland between 200-500m east of the Proposed Wind Farm site. The closest area of construction works to this area are situated over 400m away and are separated by existing hedgerows and/or areas of mature forestry. 	The magnitude of the effect is assessed as <i>Low</i>. The cross tabature of a <i>Medium</i> sensitivity species and <i>Low</i> Impact corresponds to a Low effect significance.	Short-term Slight Negative Effect